# Sam Laing

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## Introduction

I am a highly motivated individual with a passion for problem solving. I have a strong interest in both the underlying theory and the application of machine learning algorithms. In particular, I am interested in deep learning models and Bayesian machine learning.

## Education

**University of Tuebingen** — Germany

*MSc. in Machine Learning;* ***Current Grade Average: 1.48*** — *Oct 2022 – Present*

**Relevant coursework:** Deep Learning, Statistical Machine Learning, Probabalistic Machine Learning, Trustworthy Machine learning, Time Series Analysis, Self Driving Cars, Massively Parallel Computing (CUDA Programming), Information Theory

**Trinity College Dublin** — Ireland

*BA Mathematics;* ***First Class Honors (85% average)*** — *Sep 2018 – Jun 2022*

## Skills

**Languages:** Python, C++, SQL, , R, LaTeX, Prolog,

**Technologies:**PyTorch, JAX, Pandas, Git, DuckDB, FastAPI, Azure, JetBrains, SLURM, GraphX, WandB, Numpy, Plotly

**Techniques:**CNNs, RNNs, Transformers, XGBoost , Random Forrest Models, Hypothesis Testing, GLMs, Gaussian Processes, Markov Chains, Deep Q-learning, Imitation Learning,

## Experience

**SoftCo** — Dublin, Ireland

*Machine Learining Engineer* — *May 2023 – Present, Part-time*

- SoftCo develops Purchase to Pay (P2P) financial automation software. This involves matching invoice line level data with purchase order and associated logistics data. I joined a team to provide skills on machine learning and I built a Bayesian module to automate and increase the matching rates. I achieved in excess of 90% touchless processing. SoftCo was able to take customer raw data and prove they could deliver in excess of 90% auto match as part of the sales process. This had a positive impact on sales as SoftCo won a greater number of new customers at a higher invoice volume. The customer achieved significant cost savings as they only had to process the exceptio
- Designed a Bayesian model to automate a financial matching task delivering significant increases in Purchase Order-Invoice matching rates (over 90% touchless processing).
- Developed and deployed a Random Forrest model for multi-label classification task with a large number of classes
- Developed a JSON file parser and assisted in the construction of a data pipeline.
- Developed a number of forecasting models to predict customer activity and revenue
- Communicated frequently with Software Engineers through the Agile Scrum Framework regarding the deployment of models into production, the database architectures and the model APIs.
- Compiled supporting documentation on machine learning models and technical infrastructure

**Trinity College** — Dublin, Ireland

*Bachelor's Thesis* — *Sep 2021 - May 2022*

- Wrote a Bachelor's thesis under the supervision of Dr Jack Kelly in which I applied category theoretical techniques (in particular simplicial homotopy theory) to prove several fundamental theorems of algebraic topology. Attached is a copy of the thesis

**Trinity College** — Dublin, Ireland

*Undergraduate Researcher* — *Jun 2020 – Aug 2020*

- Conducted research into the Classification of Finite Rings using techniques in commutative algebra and category theory under the supervision of Professor Nicolas Mascot .

**Trinity College** Dublin, Ireland

*Teaching Assistant* *Sep 2021 – Dec 2021 and Sep 2022 - December 2022*

- Corrected assignments for the advanced Engineering Mathematics course offerred at Trinity College Dublin. The topics included Fourier Analysis, Partial Differential Equations and Linear Programming.

**Self Employed** Sep 2019 - June 2022

*Mathematics Tutor* *Dublin Ireland*

## Awards & Achievements

**Trinity College Academic Gold Medal:**Awarded to graduating students who achieved over a certain grade point avereage througout the four year degree.

**Trinity College Entrance Exhibition Prize:**Awarded to incoming students who achieved over certain points in the entrance examinations (CAO points)

**William Hasslett Memorial Prize:**Awarded to the St Andrew's College student with the best high school grades and attending Trinity College (in the Leaving Certificate Examinations) (2017)

## Hobbies

Jazz Guitar & Piano, Olympic Weightlifitng, Cycling, Chess, 8-Ball Pool, Reading

## References

Susan Spence (SoftCo founder)